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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,765	12/28/2005	Christian Goldstein	72032	7851

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EXAMINER	
D'ANIELLO, NICHOLAS P	
ART UNIT	PAPER NUMBER
1793	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/562,765	GOLDSTEIN ET AL.	
	Examiner	Art Unit	
	Nicholas P. D'Aniello	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 May 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendments

The amendment filed May 15th 2008 is acknowledged. Claims 1 and 13 have been amended, new claims 15-20 have been added, claims 1-20 remain pending in the application. The rejection of the claims under 35 USC § 102 has been withdrawn.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones et al. (US Patent No. 3,998,373) in view of Benn et al. (USP 4,575,932).

Jones et al. teach a length compensator for friction welding where the parts to be welded (14, 16) are first placed in a measuring jig (18, in order to measure them) and a linear variable displacement transducer (LVDT, 24) which measures the possible length deviation (ΔL) from a set value of the work pieces (14, 16) (column 2 line 56 – column 3 line 23, see claims 1 and 2). The LVDT creates a deviation signal (ΔL) which has to be multiplied by a proportionality factor (taken to be a correction factor, C) before it can properly be applied. This value is then used to change a set value of one of the processing parameters such as the speed (number of RPMs) or the friction length (upset, figure 3) (column 8, lines 33-44, see claims 1 and 2).

Independent claim 1 and 16 now differ from the reference in calling for the correction factor to define a correlation between the plasticization and compression stroke of at least one of the work pieces and modifying the plasticization (i.e. upset, friction length; one of a set value) by altering the compression stroke based on the correction factor. However, Benn et al., also drawn to controlling friction welding, teaches a similar method where a transducer 36 measures the upset length (plasticization) as a result (defining a correlation) of the axial thrust (compression stroke), the output of the transducer is then converted to a signal and logged in a random access memory and compared to the ideal values of upset (plasticization) and pressure (compression stroke) (column 4, lines 20-46). The pressure applied (compression stroke) by the ram mechanism 18 is then modified in accordance with the ideal values of upset (length deviation), as seen in figure 2, the applied force (compression stoke) 138 is modified within positive 140 and negative 142 limits to achieve the desired upset (plasticization) 134 value (column 5 line 5 – column 6 line 19).

It would have been obvious to one of ordinary skill in the art at the time of the invention to control the process of Jones et al. in the manner disclosed by Benn et al. to achieve the desired upset values in the friction welded work pieces.

In regard to **claims 2, 4, 18 and 20**, Jones et al. determines the correction factor (C) during operation empirically by taking live test data by making a series of welds at different weld speeds to produce a graph (column 8 line 58 - column 9 line 19) where each series is "application specific" for the specific nominal length.

Regarding **claims 3 and 19**, since a correction factor is dependent on a characteristic of a work piece, then it must be determined by an application dependent manner.

Regarding **claim 5**, Jones et al. teach the nominal length control is used to set the minimum combined length for the parts 14, 16 with which a satisfactory weld can be effected. This in turn relates the welding quality to the determination of the correction factor. The system is also designed to with an undersize rejection relay 56 which can mechanically reject the part based on quality (column 3 lines 41-54).

In regard to **claim 6**, as stated earlier, Jones et al. teach that the nominal length control is used to set the minimum combined length for the parts 14, 16 with which a satisfactory weld can be effected (column 3 lines 41-54). Further, it can be seen in Figure 3 that the weight factor (correction factor) is determined by dividing the delta RPM (maximum speed minus minimum speed) by the delta upset (maximum upset minus minimum upset). Because the upset is comparable to the length deviation, determining the maximum and minimum length deviation is taken to be embraced. The correction factors are stored in an analog memory means and conveyed to the welding machine (column 2, lines 11-35). The correction factor can also be determined by interpolation through examination of the Figure 3.

In regard to **claim 7**, as stated earlier, the LVDT creates a deviation signal (ΔL) which has to be multiplied by a proportionality factor (correction factor, C) before it can properly be applied. This value is then used to change a set value of one of the

processing parameters such as the number of RPMs or the friction length (upset, figure 3) (column 8, lines 33-44).

Claim 8 differs from Jones et al. in calling for the friction to be modified by the correction factor; however it would have been obvious to calculate the friction duration in the process of Jones et al. by taking the product of a correction factor and the length deviation because Jones et al. teaches a method of modifying a welding parameter using a correction factor and the upset (length deviation); where there is a limited number of processing parameters that could be calculated in such a manner, it would be conventional procedure for a person skilled in the art to choose an alternative parameter for friction welding such as the friction duration. None, but only the expected result of compensating deviation signal (ΔL) during a welding operation would have been achieved.

Claims 9 and 10 differ from the Jones et al. in calling for the forge force or forge stroke to be changed; where Jones et al. is silent regarding changing the forge force or stroke. However, it would have been obvious in the art that the forge force or stroke would be changed in view of Benn et al., as applied above, the forge force and stroke are modified in accordance with the a "correction factor" determined from a comparison with the ideal values for the friction welding process.

In regard to **claim 11**, in Figure 3 Jones et al. shows the varying profile of the processing parameter (speed in RPM) against space (upset in mm).

In regard to **claim 12**, Jones et al. teaches that the device has an analog memory means for asynchronously storing measured length information and digital

sequencing means for conveying this information to the welding machine in order in which it was stored (column 2, lines 11-35).

In regard to independent **claim 13**, Jones et al. discloses an apparatus for the friction welding of work pieces according to the preamble of claim 13. Jones et al. discloses that the friction welding apparatus has a measuring device (24) for determining the actual length of both work pieces (14, 16) and a length deviation (figure 1), a desired value of a process parameter, i.e. friction path, being variable in the controller (28, 34, 10) in the event of a length deviation, the controller (10, 28, 34) having a computing unit (10) for setting and changing desired values (requiring a feed unit) while taking into account a correction factor for the process parameter, i.e. friction path (column 3, lines 3-66; column 8, line 33 - column 9, line 19; table 1; claims).

Independent claim 13 now differs from the reference in calling for the correction factor to define a correlation between the plasticization and compression stroke of at least one of the work pieces and modifying the plasticization by altering the compression stroke based on the correction factor. As per MPEP 2114 relating to Apparatus and Article claims – Functional Language: While features of an apparatus may be recited either structurally or functionally, claims< directed to >an< apparatus must be distinguished from the prior art in terms of structure rather than function. >*In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997).

However, Benn et al., also drawn to controlling friction welding, teaches a similar method where a transducer 36 measures the upset length (plasticization) as a result (defining a correlation) of the axial thrust (compression stroke), the output of the

transducer is then converted to a signal and logged in a random access memory and compared to the ideal values of upset (plasticization) and pressure (compression stroke) (column 4, lines 20-46). The control mechanism then modifies the pressure applied (compression stroke) by the ram mechanism 18 in accordance with the ideal values of upset (length deviation), as seen in figure 2, the applied force (compression stoke) 138 is modified within positive 140 and negative 142 limits to achieve the desired upset (plasticization) 134 value (column 5 line 5 – column 6 line 19).

It would have been obvious to one of ordinary skill in the art at the time of the invention to control the process of Jones et al. in such a manner to achieve the desired upset values in the friction welded work pieces.

Regarding **claim 14**, as discussed previously, Jones et al. teaches a LVDT for determining the correction factors and an analog memory means for storing the calculated correction factors. The control unit of Jones et al. is taken to be programmable as this is the only way to accommodate different conditions.

Regarding **claims 15 and 17**, As per MPEP 2114 relating to Apparatus and Article claims – Functional Language: While features of an apparatus may be recited either structurally or functionally, claims< directed to >an< apparatus must be distinguished from the prior art in terms of structure rather than function. >*In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997). As the references and the claimed device for pressure are patentably indistinguishable, the apparatus of the prior art is reasonable expected to be able to perform the claimed

functionality (i.e. calculating the forge stroke as a product of the correction factor and length deviation in the case of short-time control).

Response to Arguments

3. Applicant's arguments with respect to claims 1, 9-10 and 13 have been considered but are moot in view of the new ground(s) of rejection.

4. In regard to claim 8, although Jones et al. do not teach modifying the friction duration, this is a well known process parameter that one of ordinary skill in the art at the time of the invention would recognize as a result effective variable that would be optimized through routine experimentation, or in the instant case, optimized through correlation with the other process parameters to achieve the desired result.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicholas P. D'Aniello whose telephone number is (571)270-3635. The examiner can normally be reached on Monday through Thursday from 8am to 5pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on (571) 272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NPD
7/1/2008

/Jessica L. Ward/
Supervisory Patent Examiner, Art Unit 1793